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October 8, 2019

VIA ELECTRONIC FILING

The Honorable Jocelyn Boyd
Chief Clerk/Administrator
Public Service Commission of South Carolina
101 Executive Center Drive
Columbia, South Carolina 29211

Re: South Carolina Energy Freedom Act (H.3659) Proceeding to Establish
Dominion Energy South Carolina, Incorporated's Standard Offer,
Avoided Cost Methodologies, Form Contract Power Purchase
Agreements, Commitment to Sell Forms, and Any Other Terms or
Conditions Necessary (Includes Small Power Producers as Defined in 16
United States Code 796, as Amended)
Docket No. 2019-184-E

Dear Ms. Boyd:

Enclosed on behalf of Dominion Energy South Carolina, Inc. ("DESC" or the
"Company") is DESC's Prehearing Responsive Brief in the above-captioned matter.
Per the electronic service agreement in the above-captioned matter, the Company is
serving a copy of its Responsive Brief on the parties of record and enclosing a
certificate of service to that effect.

If you have any questions or need additional information, please advise.

Very truly yours,

A handwritten signature in blue ink, appearing to read "K. Chad Burgess", written over a horizontal line.

K. Chad Burgess

KCB/kms
Enclosure

(Continued . . .)

The Honorable Jocelyn Boyd

October 8, 2019

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Carrie Grundman, Esquire
Maia Danaid Hutt, Esquire
(all via electronic mail only w/enclosures)

BEFORE
THE PUBLIC SERVICE COMMISSION OF
SOUTH CAROLINA
DOCKET NO. 2019-184-E

IN RE:

South Carolina Energy Freedom Act (H.3659))	
Proceeding to Establish Dominion Energy South)	CERTIFICATE OF
Carolina, Inc.'s Standard Offer, Avoided Cost)	SERVICE
Methodologies, Form Contract Power Purchase)	
Agreements, Commitment to Sell Forms, and Any)	
Other Terms or Conditions Necessary (Includes)	
Small Power Producers as Defined in 16 United)	
States Code 796, as Amended) – S.C. Code Ann.)	
Section 58-41-20(A))	

This is to certify that I have caused to be served this day one (1) copy of
Dominion Energy South Carolina, Inc.'s **Prehearing Responsive Brief** to
the persons named below at the address set forth via electronic mail only:

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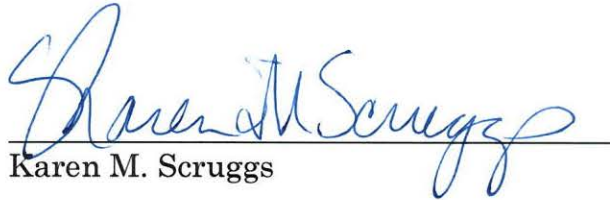
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Karen M. Scruggs

Cayce, South Carolina

This 8th day of October, 2019

BEFORE

THE PUBLIC SERVICE COMMISSION OF

SOUTH CAROLINA

DOCKET NO. 2019-184-E

IN RE:)	
South Carolina Energy Freedom Act)	
(H.3659) Proceeding to Establish Dominion)	
Energy South Carolina, Incorporated's)	
Standard Offer, Avoided Cost)	
Methodologies, Form Contract Power)	
Purchase Agreements, Commitment to Sell)	DOMINION ENERGY SOUTH
Forms, and Any Other Terms or Conditions)	CAROLINA, INC.'S
Necessary (Includes Small Power Producers)	PREHEARING RESPONSIVE BRIEF
as Defined in 16 United States Code 796, as)	
Amended) - S.C. Code Ann. Section 58-41-)	
20(A))	

Pursuant to Order No. 2019-103-H, dated September 13, 2019, Order No. 2019-108-H, and S.C. Code Ann. Reg. 103-851 (2012), Dominion Energy South Carolina, Inc. ("DESC" or the "Company") herein submits its prehearing responsive brief to the Public Service Commission of South Carolina ("Commission") in the above-captioned matter.

RESPONSES TO OTHER PARTIES' POSITIONS¹

I. THE SOUTH CAROLINA OFFICE OF REGULATORY STAFF ("ORS")

Through its pre-filed direct testimony and prehearing brief filed on September 30, 2019, ORS acknowledges that, as a general matter, the Difference in Revenue Requirements ("DRR")

¹ Order No. 2019-108-H invited the parties to file a second, responsive brief in which they were advised to provide "a summary of responses to the other parties' positions and the responses thereto." In furtherance of administrative economy and in the interest of brevity, DESC, in filing this responsive brief, has not attempted to address or rebut each and every issue raised in the responsive direct testimony filed by the other parties of record on September 30, 2019. Rather, DESC limits its discussions herein to only those issues identified in the prehearing briefs filed by the other parties of record on September 30, 2019. DESC therefore incorporates herein by reference the pre-filed direct and rebuttal testimony of its witnesses for a more complete discussion of the positions advanced by the Company in this matter. Moreover, in the event the Company has not addressed a particular issue in this responsive

methodology proposed by the Company to calculate avoided energy and capacity costs is reasonable and appropriate. In addition, ORS recognizes that energy generated from solar Qualifying Facilities (“QFs”) interconnected with DESC’s system creates additional operating costs for the Company due to the variable nature of the electric generation. However, ORS recommends certain modifications to DESC’s proposed avoided cost methodology and that the variable integration costs related to solar generation not be approved. The effect of these recommendations would be to unnecessarily and unreasonably shift costs from the solar QFs to customers in violation of both the Public Utility Regulatory Policies Act of 1978 (“PURPA”) and 2019 Acts No. 62 (“Act No. 62”). Accordingly, ORS’s recommendations as set forth in its direct testimony and its brief should be rejected.

ORS first suggests that it is confusing to calculate DESC’s proposed Variable Integration Charge (“VIC”) in one manner for those Power Purchase Agreements (“PPAs”) that have a VIC clause in their PPA and in a different manner for the rates set forth in Rate PR-1 and the Standard Offer. As Company Witness Neely discusses in his pre-filed rebuttal testimony, in setting the price for certain past PPAs the avoided cost calculations did not include the effect of solar generation on the operating reserves. However, these PPAs contained terms providing that VIC charges could be calculated in the future and added to the existing contracts. The historical VIC cost to apply to these contracts is what the Navigant Cost of Integration Study (“Navigant Study”) quantified. The Navigant calculation is based on historical levels of solar generation and is not relevant to costs associated with the next 100 MW increment of solar capacity or any future PPAs. The Navigant calculation will be used for setting the VIC for this defined group of existing PPAs only and will not have any relevance outside of those existing PPAs. By contrast, the avoided cost calculations

brief, DESC does not intend to waive and specifically reserves its right to advance all of the issues, assertions, and defenses presented in the prefiled direct and rebuttal testimony of its witnesses in support of its positions in this matter.

which are presented in DESC's testimony measure the avoided costs associated with the next 100 MW of solar generation to be added to the system. These are forward looking calculations and not historical ones. These calculations have a very different purpose and basis than the Navigant Study. The two are not interchangeable.

As mentioned previously, ORS states in its brief that it agrees with the DRR methodology proposed by DESC. However, ORS then challenges certain inputs and assumptions that DESC employed in developing avoided costs, including the amount of additional operating reserves required to operate the system, in arriving at its alternative avoided cost proposal. ORS's recommendation in this regard is premised upon its primary assertion, made through the testimony of its witness Mr. Brian Horii, that DESC overstated the need for additional operating reserves to accommodate the integration of solar energy and that additional operating reserves reduce the net avoided energy costs estimated for solar resources. ORS's assertions, however, are unfounded and should not be adopted by the Commission.

Specifically, and as discussed in the direct and rebuttal testimony of its witnesses, the Company analyzed its system as well as the operating characteristics of solar generators on its system in order to determine the appropriate amount of operating reserves it needs to integrate the substantial amount of solar generation expected to interconnect with its system by 2021. As a result of this detailed analysis, DESC determined that to maintain reliable service to customers and meet its requirements under Federal Energy Regulatory Commission ("FERC"), North American Reliability Corporation ("NERC"), and Virginia and Carolina Reserve Sharing Group ("VACAR") requirements, it modeled operating reserves equal to 35% of the installed solar capacity. Even so, as explained in the testimony of Mr. Neely, the Company has concerns that

even this level of reserves may not be sufficient to maintain system reliability. However, the Company believes the risk level is acceptable and manageable.

ORS, on the other hand, suggests that the Company should be willing to accept an even greater level of risk, thereby exposing DESC's customers to reduced safety and reliability. Not only does the Company believe that such a requirement would be unwise and imprudent, the methods relied upon by ORS to support this greater level of risk are flawed and should not be relied upon in establishing the avoided cost methodology to be approved in this matter.

The Company's witnesses testify that in the end the Company will have to incur the cost required to meet reliability standards whether or not those costs are reflected in the avoided cost methodologies and calculations approved here. If not recovered from the solar developers who caused those costs to be incurred, that customers will have to pay them, a result which is contrary to the intent of Act No. 62.

In particular, through the direct testimony of Mr. Horii, ORS suggests that DESC should analyze its need for operating reserves by reviewing data on solar generation "drops" over a shorter timeframe than the one-hour periods used by the Company. Mr. Horii suggests the use of 15-minute periods; however, the rebuttal testimony of Company Witness Neely demonstrates that solar facilities can steadily reduce generation over longer periods of time than 15 minutes. Mr. Hanzlik provides actual operating data showing unanticipated solar declines occurring progressively over periods longer than four hours, even as much as eight hours. Using data analyzed over a 15-minute period as ORS suggests therefore would not capture the needed reserves to cover the full extent of progressive declines in solar output. Company Witness Bell explains that DESC uses an hourly profile for operating reserves based on the VACAR contingency reserve requirements and identifies data that clearly shows drops of 35% of installed MW occur with

significant frequency over a one-hour timeframe. Failing to maintain operating reserves for solar intermittency equal to at least 35% of solar capacity would pose a higher risk to system reliability than is acceptable to system operators. As explained in the testimony of Company Witness Bell, DESC has already experienced many large and unpredicted drops in solar generation. For these reasons, the level of risk suggested by ORS be used in the avoided cost methodology is simply not tolerable or reasonable when planning for future system needs and to provide safe and reliable electric service to DESC's customers.

ORS fails to include any costs associated with solar integration in its proposed avoided energy cost values even though its witness Mr. Horii agrees that solar integration costs do exist. However, Mr. Horii fails to note that in implementing Act No. 62, the Commission is required to ensure that "each electrical utility's avoided cost methodology fairly accounts for costs avoided by the electrical utility or *incurred by the electrical utility*, including, but not limited to, energy, capacity, and ancillary services provided by *or consumed by small power producers* including those utilizing energy storage equipment." S.C. Code Ann. § 58-41-20(B)(3). As a result, under ORS's recommendation, all of these costs will be shifted to and be borne by DESC customers, which is directly contrary to the mandates of Act No. 62 and, more specifically, S.C. Code Ann. § 58-41-20(A), which states that "[a]ny decisions by the commission shall be just and reasonable to the ratepayers of the electrical utility ... and shall strive to reduce the risk placed on the using and consuming public."

The fact that ORS omits any of these costs is even more perplexing in light of Mr. Horii's testimony that the methodology used in the Navigant Study is reasonable and acceptable to estimate solar integration costs and that integrating renewable generation creates additional costs for utilities. The Navigant Study does two principal things: (1) it validates the methodology used

by DESC to calculate the impact of solar variability and DESC's need for operating reserves (i.e., the 35% additional operating reserve needed for solar) and (2) it calculates the VIC to apply to certain existing PPAs. Those PPAs did not include the cost of additional operating reserves for solar in the avoided cost they adopted, but included terms recognizing that these costs could be computed and shown as a reduction to avoided costs in the future. The VIC calculation in the Navigant Study applies only to certain existing PPAs and is based on historical, not prospective, data.

Mr. Horii questioned certain of the assumptions used by Navigant regarding the risk of variable integration. But the rebuttal testimony of Company Witness Tanner makes clear that the Navigant Study properly considered the balancing of the risk of solar undergeneration and the likelihood of it occurring, and that the threshold used is appropriate for calculating the VIC. In addition, Mr. Tanner refutes Mr. Horii's criticism of the fact that the model used in the Navigant Study reflects the need to maintain solar reserves at all hours of the day, including nighttime hours when solar is not generating power. Mr. Tanner explains that more than sufficient reserves are available on the DESC system at night. The additional reserves required for solar integration are not a binding constraint on the system in non-solar hours and do not materially impact the overall system operating costs or contribute to the calculation of the VIC. Further, Mr. Tanner analyzed and blended multiple cases with different reserve requirements to ensure that any effect of was properly accounted for. In short, DESC has appropriately calculated avoided energy costs for solar and non-solar.

With respect to ORS's suggestion that the Company should be required to conduct technical workshops in the future to gain input from the solar community and other stakeholders regarding variable integration charges, Company Witness Raftery responds that DESC is agreeable

to this recommendation. However, he makes clear that these workshops should be conducted in conjunction with and as part of the Integration Study authorized by Act No. 62. In this way, the technical workshops regarding the integration charge can contribute to and enhance the integration study so as to provide input necessary for the Commission to fully evaluate the issues pertinent to the establishment and development of renewable energy programs. That is not required for the present docket.

ORS claims that DESC improperly fails to grant avoided capacity cost payments to solar generators. These claims also are without merit. As discussed by Company Witness Neely, DESC analyzed the impact of solar on its daily peak demands. That study is attached to the direct testimony of Company Witness Lynch as Exhibit No. __ (JML-1). The study demonstrates that solar generation does not help DESC avoid any need for capacity in the winter season; therefore, the capacity cost avoided as a result of solar generation is zero. New capacity will need to be added to meet winter demands whether or not new solar generation is added to the system. Making capacity payments to solar providers when no capacity costs are avoided would inappropriately increase costs to all other customers.

ORS asserts that DESC used the wrong reserve margins for the winter and summer seasons. But in fact, as Mr. Neely testifies, Mr. Horii confuses the base and peaking reserve margins that DESC uses to reduce costs to customers. As shown in Exhibit No. __ (JML-3) of Company Witness Lynch's direct testimony and further discussed in Mr. Neely's rebuttal testimony, DESC maintains two components of reserve margin for each season. Additional generating resources, such as gas fired turbines, are added to meet a 14% base reserve margin requirement during the winter. Lower cost options are added to meet a second 21% reserve margin to cover the extreme weather events which have a likely duration of five to ten days a year. The resources to cover peaks

occurring over five to ten days a year are less expensive than year-round resources. DESC also separates its reserve requirements into peaking and base in order to develop a resource plan that is least cost to its customers. These reserve margins are reasonable and necessary to meet the reliability requirements which the Commission and our customers expect. The Company currently only plans to add higher cost, more permanent generating resources to the resource plan when the winter reserve margin drops below the 14% trigger or the summer reserve margin drops below the 12% trigger.

ORS also challenges DESC's avoided capacity costs based on the Company's use of a 60-year economic life of a combustion turbine ("CT") plant to perform its calculations and instead suggests that it is more appropriate to use a 20-year economic life span. However, the "SCE&G 2014 Depreciation Study" that was filed with the Commission in Docket No. 2015-313-E and approved by the Commission on September 16, 2015, demonstrates that the life span of peaking turbines is between 60 and 75 years. In fact, DESC has peaking turbines that are still operating after more than 45 years of service, as reflected in its 2019 Integrated Resource Plan ("IRP"). It therefore is entirely appropriate and evidence-based to use a 60-year economic life when considering the annual cost of a CT unit. To suggest using a shorter economic life is inconsistent with the actual useful life and the analysis reviewed and accepted by the Commission and would result in DESC customers overpaying avoided capacity costs.

ORS increases the recommended avoided capacity cost calculation by using a 93 MW change in generation instead of a 100 MW change, which also is incorrect. PURPA specifically provides that a utility may use a capacity change of up to 100 MW to calculate avoided costs and using a capacity change of 100 MW is consistent with the avoided energy costs and with the Company's prior calculations. Moreover, using a 93 MW capacity change as ORS's witness Mr.

Horii suggests would not address his expressed concern about the “lumpiness” in the calculation because the only way to avoid this effect would be for DESC to add additional resources that equal the amount needed to meet the reserve margin requirement each year, which is unreasonable and impracticable.

ORS also identifies in its brief Mr. Horii’s testimony regarding Dr. Lynch’s Effective Load Carrying Capacity Calculation (“ELCC”). However, Dr. Lynch makes clear in his rebuttal testimony that he only calculated the ELCC to demonstrate that the loss of load expectation (“LOLE”) method, which underpins the ELCC calculation, does not work for the DESC system. The LOLE method shows avoided capacity costs even though DESC needs capacity only in the winter and solar generation cannot be counted to be online on cold winter mornings before sunrise when the system is peaking. These facilities simply cannot generate any electricity before sunrise.

ORS also suggests that DESC should provide a 24% solar credit to solar QFs. As Dr. Lynch explains, however, paying a 24% solar credit to new solar providers when there are no avoided capacity costs in fact means DESC’s customers will be paying amounts above avoided cost for QF power. Doing this would be unjust and unreasonable to ratepayers, would not be in the public interest, and would be inconsistent with PURPA and FERC regulations. To the contrary, if ORS suggestion is approved, it only would result in a clear subsidy to solar developers and a shifting of costs to DESC’s customers, which is specifically prohibited by PURPA and Act No. 62.

Mr. Horii acknowledges that the Company’s Notice of Commitment to Sell Form (“NOC Form”) is consistent with PURPA and FERC implementation guidelines. However, he suggests that one clause in the NOC Form needs further clarity regarding the establishment of adequate interconnection facilities and the eligibility of a QF for payments or damages. In response, Company Witness Kassis states that Section 8(iii) of the NOC Form is intended to address these

concepts and provides a QF with assurance that, if DESC has yet to construct the facilities necessary to provide interconnection service to the QF, the 365-day time period will be extended so that the NOC Form will not terminate. In such cases, DESC will inform the QF at least 30 days prior to the expiration of the 365-day period and provide a description of the additional facilities required. No liquidated damages will be imposed on either party as a result of such extension. As such, DESC revised Section 8(iii) of the NOC Form to expressly state that no such damages will be imposed on either party as a result of DESC having insufficient interconnection facilities. The revisions further clarify the upgrades contemplated by this section are DESC's responsibility. These changes are reflected in the revised Exhibit No.__(DFK-3) provided with Company Witness Kassis' rebuttal testimony.

ORS also believes the Company offered a Form PPA that is consistent with PURPA and FERC implementation guidelines and conforms to industry guidelines. He also states that the Standard Offer is consistent with PURPA and contains commercially reasonable terms and conditions. However, he expresses concern that Section 6.1(a) of the Standard Offer lacks clarity. In response, Company Witness Kassis agrees with Mr. Horii's testimony in this regard and states that DESC has removed the second sentence of Section 6.1(a) in its entirety from both the Form PPA and Standard Offer to address this issue. These changes are reflected in the revised Exhibit No.__(DFK-1) and revised Exhibit No.__(DFK-2) provided with Mr. Kassis' rebuttal testimony.

Notwithstanding ORS's criticisms of DESC's proposals, ORS, through its witness Mr. Robert A. Lawyer, concludes that DESC's filings in this matter satisfy the requirements of S.C. Code Ann. § 58-41-20(A) of Act No. 62. ORS also properly acknowledges that customers ultimately are responsible for all avoided cost payments through the annual fuel proceeding under S.C. Code Ann. § 58-27-865 and that the Company's VIC can help limit subsidization of QFs by

ratepayers. Mr. Lawyer further testifies that the Company's annual fuel proceeding in 2020, Docket No. 2020-2-E, is the most appropriate proceeding for DESC to implement the "true-up" of avoided energy and capacity, VIC, and Value of Distributed Energy Resources ("DER") Rates, which were bifurcated from consideration in Docket No. 2019-2-E.

However, Mr. Lawyer suggests that certain language should be added to DESC's proposed Rate PR-1 and the Standard Offer to clarify the effects of an executed Legally Enforceable Obligation ("LEO") on the "Limiting Provisions" of the tariffs. As Company Witness Kassis explains, however, Mr. Lawyer appears to be referencing the submittal of an executed NOC Form to DESC by a QF. In that case, the QF must then execute the Form PPA within a reasonable period of time from such submission. Once the Form PPA is executed, its terms—including provisions detailing respective liability—will govern the relationship between the QF and DESC. As such, the Company believes it is not necessary to replicate the same level of detail in the NOC Form.

Regarding the Avoided Cost Methodology, ORS suggests the addition of language that would state the Commission must approve updates to the factors or analysis. Although DESC agrees that any changes to the methodology itself would require Commission approval, the Company presumes that the reference to "factors or analysis" as contained in the testimony of Mr. Lawyer is not intended to require the Company to seek Commission approval prior to updating the data inputs incorporated into the methodology and used to calculate DESC's avoided cost. Otherwise, DESC would be required to come before the Commission each and every time it negotiates a PPA with a QF in order to receive approval for the underlying data used in the methodology to calculate avoided costs for each specific project. Such an interpretation not only would create an undue administrative burden on the Company and the QFs, but also would appear to be at odds with the clear intent of S.C. Code Ann. § 58-41-20(A), which requires approval of

the avoided cost methodology. It also would conflict with the requirements of S.C. Code Ann. § 58-41-20(C), which provides that “[t]he avoided cost rates offered by an electrical utility to a small power producer not eligible for the standard offer must be calculated on the avoided cost methodology most recently approved by the Commission.” Assuming DESC’s interpretation of ORS’s proposed language is correct, the Company is not opposed to Mr. Lawyer’s suggestion. But if he does propose to have DESC obtain Commission approval each time it negotiates a PPA with a QF, DESC believes that his proposal should not be approved because it is unnecessary and would add an undue burden on DESC and QFs that is not contemplated by Act No. 62.

II. THE SOUTH CAROLINA SOLAR BUSINESS ALLIANCE (“SCSBA”) AND JOHNSON DEVELOPMENT ASSOCIATES (“JDA”)

Through their Joint Prehearing Brief (“Joint Brief”) and pre-filed direct testimony, SCSBA and JDA make a number of assertions regarding that are simply incorrect and demonstrate their clear intent to drive avoided costs as high as possible to the detriment of DESC’s customers and for their own benefit.

First, SCSBA and JDA incorrectly assert that the Company has substantial incentives to undermine competition from QFs as a purported capital bias towards the interests of shareholders rather than ratepayers. They also make the unsupported assertion that the Company’s proposals in this proceeding would eliminate large-scale solar development in South Carolina. However, SCSBA and JDA have not provided any evidence to support their speculative criticisms of DESC’s analyses. To the contrary, DESC’s obligation and duty is to be faithful to the requirements of Act No. 62 and PURPA and to determine its cost as accurately as reasonably possible so that its customers are not harmed by paying solar developers more than the Company’s actual avoided costs.

Similarly, SCSBA and JDA are misguided in their suggestion that DESC is seeking to set solar avoided costs low so that the Company can expand its rate base and increase profits for DESC shareholders. As discussed by Company Witness John Raftery in his rebuttal testimony, these claims are based upon an assumption that additional solar generation will displace capacity that DESC would otherwise add to its system to be able to serve customers reliably. This is simply not the case because solar does not contribute to meeting DESC's peak capacity requirements. Furthermore, under the newly adopted competitive bidding requirements, if new capacity above 75 MW is required, renewable power generators will have the opportunity to bid for the provision of that capacity, thus ensuring that if solar developers can meet future capacity needs more cheaply, reliably and efficiently, they will have the opportunity to do so. To the contrary, and in stark contrast to the regulatory protections that customers have against DESC constructing unneeded facilities, solar providers have an unregulated price incentive to seek the highest possible avoided costs in order to maximize their own returns on operation.

SCSBA and JDA also incorrectly suggest that PURPA and Act No. 62 recognize and prioritize competition and consumer choice within the state's electricity marketplace and are intended to increase competition from independent power producers. However, nothing in PURPA states that its intent is to increase competition between QFs and utilities or discuss anything related to competition or increasing consumer choice. Furthermore, Act No. 62 directs the Commission "to address all renewable energy issues in a fair and balanced manner, considering the costs and benefits to all customers of all programs and tariffs" and "to ensure that the revenue recovery, cost allocation, and rate design of utilities that it regulates are just and reasonable" S.C. Code Ann. § 58-41-05. The Commission is also directed that any decisions it issues in this matter "shall be just and reasonable to the ratepayers of the electric utility, in the public interest, consistent with

PURPA ... nondiscriminatory to small power producers; and shall strive to reduce the risk placed on the using and consuming public.” Thus, the purpose of Act 62 is not increasing competition but “the development of renewable energy resources, such as solar generation, **in a manner that is fair and balanced to all customers** of all programs related to renewable energy and energy storage.” By setting avoided costs on a fair and objective basis, the Commission will fulfill PURPA’s legislative intent of fostering energy conservation through the development of renewable energy resource, as well as the clear legislative mandate of Act No. 62 that compensation paid for solar generation must not shift costs to customers.

SCSBA and JDA also assert that QFs must be able to obtain “regularly-available market-rate” financing for the costs of their projects and suggest that the PURPA and Act No. 62 both require “parity between QFs and the utility financing while also keeping the ratepayer in mind.” In response, Company Witness Kassis first clarifies that PURPA and Act No. 62 seek to protect ratepayers and not merely “keep ratepayers in mind.” In addition, Mr. Kassis states that FERC examined the ability of QFs and non-QFs to obtain financing and concluded that both QFs and non-QFs have access to financing. It did not, however, compare a QF’s financing with that of a utility as Ms. Chilton suggests, but only considered the parity between QFs and non-QFs. Finally, Mr. Kassis testifies that FERC observed that existing PURPA avoided cost rate provisions are not necessary for non-QF, independent power generators to establish contractual arrangements and obtain financing. Therefore, after comparing QFs to non-QFs, FERC concluded not only that there are sufficient financing options, but actually that there will still be sufficient financing options even after adopting its reform measures.

The suggestion, as set forth on page 9 of the Joint Brief, that long-term contract purchases from QFs is less risky than the construction and ownership of utility facilities is also flawed. As

discussed by Company Witness Raftery, adding solar generation will not displace capacity that DESC would otherwise add to its system to serve customers reliably. He explains that solar resources do not generate power in the early morning hours when winter peaks occur and so do not provide capacity to meet winter peak needs. Likewise, adding solar resources will not change DESC's capacity needs because these resources do not add to the capacity that will be available to meet winter peaks. Company Witness Bell further explains that DESC's system can be expected to experience unpredicted drops in solar generation of 62% of installed Solar MW over 4 hours. He testifies that it is not realistic to assume these drops will not coincide with a unit trip, unit forced outage, limited transmission interface, or unusually high loads and that where these events coincide and result in a generation shortfall. This risk is compounded as more solar is added to the system. In contrast to these risks, as explained by Company Witness Raftery, there are protections in place to ensure that DESC's customers do not face the risk of unnecessary or non-economical capacity resources being added to the system. The Utility Facility Siting and Environmental Protection Act, S.C. Code Ann. §§ 58-33-10, et seq. (the "Siting Act"), requires electric utilities to obtain Commission approval and receive a Certificate of Environmental Compatibility and Public Convenience and Necessity before adding an electric generating plant with a capacity exceeding 75 MW. And the Settlement Agreement entered into between Dominion Energy, Inc., SCE&G (now DESC), and the South Carolina Solar Business Alliance in the 2017 merger docket requires DESC to enter into a competitive, all-source solicitation bid process that includes consideration of renewable resources for adding any nameplate capacity above 75 MW. The Settlement Agreement also requires an Independent Evaluator to evaluate the bidding process and make a report to the Commission regarding that process.

Even though SCSBA and JDA recognize that the intervenors in this proceeding have engaged in multiple rounds of discovery, SCSBA and JDA also make the baseless suggestion that the Company has failed to satisfy the requirements of S.C. Code Ann. § 58-41-20(J) that its avoided cost filing must be reasonably transparent. In fact, the testimony of SCSBA's own witness, Mr. Burgess, disproves SCSBA's and JDA's claims in this regard. As discussed by Company Witness Neely, Mr. Burgess accurately describes the methodology used by the Company, which indicates that he fully understands and is aware of the methodology employed by DESC as well as its individual components and the underlying data. In addition, DESC properly responded to all of SCSBA's and JDA's requests for information. Accordingly, their claims are without merit and should be summarily rejected by the Commission.

SCSBA and JDA also acknowledge that, under PURPA, avoided cost rates may differentiate among QFs using various technologies. Even so, they attempt to suggest that it is inappropriate for DESC to use different avoided cost methodologies for solar and solar plus storage resources. They also assert that the rates must represent the full suite of QF technological possibilities and that a single, technology-neutral QF rate should be determined regardless of the underlying technology. Their claims are unreasonable, however. As Company Witness Neely testifies that the "full suite of QF technological possibilities" increases, not reduces, the need for resource specific avoided cost calculations. Consequently, the different methodologies are not only appropriate and reasonable, but result in the most accurate determination of avoided cost for each technology, which DESC believes is consistent with the requirements of Act No. 62.

Regarding DESC's proposed use of the DRR methodology to determine avoided energy costs, SCSBA and JDA agree that this methodology, which has been approved by the Commission for a number of years, is appropriate for use in this proceeding. However, they raise certain

concerns regarding the time-of-delivery periods and request that more information be provided in this regard. These also are specious claims as explained by Company Witness Neely. Specifically, the time period avoided costs are only available to non-solar QFs. It therefore is unreasonable to believe that these time periods are somehow biased against solar QF projects and SCSBA and JDA provide no explanation in this regard.

SCSBA and JDA also challenge the Company's proposal for a VIC to be applied to QFs that have a VIC clause in their existing PPA and to incorporate the integration costs into the avoided energy costs of future QFs. But as discussed previously and as ORS agrees, solar integration costs do exist. SCSBA and JDA therefore essentially are recommending that all of these costs be shifted to and be borne by DESC customers, which is directly contrary to the mandates of Act No. 62 and specifically S.C. Code Ann. § 58-41-20(A) and PURPA

SCSBA and JDA further make the unsubstantiated claim that, in its modeling, DESC did not make any adjustments to the QF resource output to account for the ability of storage to provide energy during peak times. They also suggest that DESC's solar plus storage tariff incorporates restrictive sizing requirements for storage facilities without any reasonable basis and that DESC must control the dispatch of the storage. Both of these contentions are refuted by Company Witness Tanner, who recognizes that storage and allowing for operational changes could provide some ancillary services. Company Witness Neely also explains that DESC has not proposed a solar with storage tariff because it expects that the size of these projects will exceed the 2 MW limit for standard offer projects. It also is likely that these projects will need unique calculations of energy and capacity that are more appropriately addressed under the Form PPA tariff.

In their Joint Brief, SCSBA and JDA also claim that DESC's model appears to have limited consideration of energy imports and exports which does not reflect actual system operations and

may not reflect least cost planning. To the contrary, Company Witness Neely states the avoided energy cost model is designed to model the DESC system in a way that simulates the actual dispatch of energy resources and that DESC system operates primarily as an isolated system with limited off-system purchases and sales. Although it is unclear whether using a different approach would increase or decrease avoided cost, as a general rule, adding more resources to the model serves to lower the marginal cost and likely the avoided cost, which would have the opposite effect suggested by SCSBA and JDA.

SCSBA and JDA also make the unsupported assertion that DESC's avoided energy cost calculations do not account for environmental costs related to coal ash management and disposal. However, Company Witness Neely explains that, while coal combustion residual costs are not modeled in PROSYM, the revenue from the sale of coal ash offsets most of the ash handling and disposal costs. Because the expected net costs for 2019 created by coal combustion residuals are approximately \$0.0001/MWh, this value is too small to make a meaningful impact.

Regarding avoided capacity costs, SCSBA and JDA claim that the Company did not use the DRR method but merely asserts that solar QFs do not provide any capacity value. They also cite certain alleged "deficiencies" in the calculations. Company Witness Neely testifies however that DESC's need for capacity is driven by the winter season and that, because solar does not consistently provide capacity during the winter peak periods, the Company is unable to avoid any of its projected future capacity needs. For this reason, the avoided capacity cost of solar is zero.

SCSBA and JDA also challenge DESC's proposed VIC, stating that integration costs should not be established until an independent integration study has been performed. As discussed by Company Witness Bell, this suggestion is neither appropriate nor required by Act No. 62. The DESC system is already experiencing the effects of these solar resources and customers are

currently paying additional costs. As certain executed PPAs authorize, these variable integration costs should be recovered from the solar providers at the earliest opportunity in order to remove these costs from the fuel costs paid by customers. In addition, that portion of Act No. 62 that directs ORS to study the entire state based on the balancing areas of each electrical utility and the benefits of solar and other types of generation to modify or enhance the State Energy Plan. The integration study contemplated by Act No. 62 is forward looking, but the VIC at issue here apply only to certain existing PPAs. The recommendation that implementation of the proposed VIC be delayed therefore should be rejected.

The Navigant Study also is not subject to the alleged flaws suggested by SCSBA and JDA in their Joint Brief. First, they suggest that Navigant improperly modeled DESC as an islanded system. However, DESC's witness Tanner testifies that the Navigant Study is focused on operational changes that DESC needs to adopt in order to maintain reliability given the variability of solar resources. As the operator of a balancing area, DESC needs to maintain self-sufficiency in planning. Absent a broader reserve sharing agreement for renewable integration, it is inappropriate to simply assume that surrounding utilities will have available resources ready to support the Balancing Area should a reliability event occur. He also explains that, while DESC does trade electricity with surrounding systems, these trades generally are made to improve system economics, not for reliability issues. DESC does not rely on short-term trades for any long-term reliability planning.

SCSBA and JDA also state that Navigant did not appropriately account for the reduction in forecasting error, the increasing solar generation interconnecting with DESC's system, or the geographic diversity of solar. But the Navigant Study uses a generally accepted method for calculating the forecast error of solar generation based on a data set provided by the U.S.

Government's National Renewable Energy Lab ("NREL") that was created for the purpose of integration studies. Furthermore, Navigant took care to avoid overstating reserve requirements, ensured that geographic diversity of solar generation was fully included, and properly balanced risks and the cost of holding additional reserves. In particular, Navigant carefully designed the Navigant Study to ensure that geographic diversity was properly considered because it is a significant driver of reductions in volatility in solar generation. The Navigant Study examined four projects spread as widely as possible across the DESC service territory to reflect the diversity in weather that drives solar generation. Nevertheless, because of the small size of DESC's service territory, Dr. Tanner explains there is a material limit to the ability for geographic diversity to reduce the overall generation variability of the solar fleet.

SCSBA and JDA also challenge Navigant's use of a 4-hour ahead forecast and suggest that shorter forecasting periods, such as 2-hour or 5-minute ahead forecasts, should be used instead. As Dr. Tanner explains, however, the 4-hour ahead forecast is provided by NREL in a dataset created specifically for renewable integration studies. Therefore, it is appropriate to use this dataset for evaluating the forecast error faced by DESC. Going forward, as operational experience with solar is gained, it will be appropriate to use actual solar forecast data and actual solar generation.

SCSBA and JDA also disagree with Navigant's calculation of VIC costs using varying levels of operating reserves and blending those results using weightings tied to the proportion of days with the appropriate level of solar uncertainty. They also question the assumption that additional reserves equaling 35% of installed solar capacity is required to integrate solar and that Navigant failed to incorporate actual observed integration cost levels based on increased levels of solar.

In responding to these issues, Dr. Tanner notes in his rebuttal testimony that, contrary to SCSBA's and JDA's suggestions, offline combined cycle generating facilities ("CCs") can only provide operating reserves if they are operating, but are not allowed to provide reserves when they are offline. Even though this is properly represented in the production cost model and the Navigant Study, it is not true that CCs are not allowed to provide reserves in the Navigant Study. Rather, in response to forecast error, operating reserve requirements are increased if it is the most cost-effective solution, and the production cost model will start up CCs in order for them to be providing reserves in the hour they are needed.

As discussed previously, Dr. Tanner also explains that the Navigant Study properly considers the balancing of the risk of solar undergeneration and the likelihood of it occurring and the threshold used in the Navigant Study for representing the risk of solar undergeneration is appropriate for the VIC calculation. Further, DESC has not set its operating reserves at a level where an unreasonably low risk is being assumed. Instead, the Company analyzed its system as well as the operating characteristics of solar generators on its system and determined that it was appropriate to model operating reserves equal to 35% of the installed solar capacity based upon 2018 solar data. In sum, the Company and its customers are exposed to risks, but the Company believes the risk level is acceptable and manageable however, any greater risk, as is recommended by SCSBA and JDA, would be unwise and imprudent.

Finally, SCSBA and JDA allege that DESC's integration cost analysis fails to consider or evaluate ways DESC could more effectively integrate renewable energy onto its grid. In response, Company Witness Eric Bell notes that it would be irresponsible and could subject the Company to penalties and to being cut off from the grid if it were to simply ride the tie lines on the eastern interconnect in the event of a sudden loss of 1,048 MW of solar generation. He also points out that

FERC has the authority to fine companies that disregard the NERC/FERC Electric Reliability Organization standards and that each operator of a Balancing Area, such as DESC, is held responsible for compliance independently of the surrounding areas.

Company Witness Hanzlik also explains how NERC ensures the reliability of our nation's electric grid and the enforcement of its Standards. Specifically, the country is split into three interconnections or regions, the Eastern Interconnection, the Western Interconnection and ERCOT (Texas), all of which are relatively large and independent of one another. Within each region there are Balancing Authorities ("BAs"), and within each BA there are transmission operators that are all following very similar operating guidelines. NERC promotes reliability by ensuring compliance at each level starting with the smallest level and then moving to each larger level. NERC's mandatory Resource and Demand Balancing ("BAL") BAL standards reflect this approach. Each individual BA must comply with these mandatory standards to protect the reliability of the overall Eastern Interconnection. Because Mr. Stenclik's suggestion is the opposite of what NERC allows, it therefore is inappropriate and should not be considered by the Commission.

Regarding DESC's proposed Form PPA and Standard Offer, SCSBA and JDA suggest that certain terms are commercially unreasonable and inconsistent with PURPA and Act No. 62. For instance, they question the terms and conditions related to liquidated damages. Company Witness Kassis states, however, that these provisions are important should a party challenge or a court examine the enforceability of these damages. Regarding their challenges to the deadlines for completion dates, Mr. Kassis notes that the Standard Offer and the Form PPA are contracts for the purchase of power and, therefore, it is appropriate to keep the language regarding the completion date as written. SCSBA and JDA also advocate for reducing the "guaranteed energy production"

from QFs. Mr. Kassis disagrees with this position, however, and states that guaranteed energy production is a commercial matter to address risk from a QFs failure to perform in accordance with the contract. Moreover, he notes that compliance with this provision is largely within the control of the QF in that such failure to perform typically results from design flaws, equipment issues, or maintenance related failures.

As to SCSBA and JDA's criticisms of the terms and conditions for energy storage and other terms and conditions of the Standard Offer and Form PPA, Mr. Kassis states that important protections must be in place to ensure that DESC's customers do not face the risk of unnecessary or non-economical capacity resources being added to the system. The Siting Act, protects ratepayers with respect to the addition of new generation facilities, requiring electric utilities to obtain Commission approval and receive a Certificate of Environmental Compatibility and Public Convenience and Necessity before adding an electric generating plant with a capacity exceeding 75 MW. Thus, ratepayers are protected with respect to the addition of major utility facilities through the oversight of this Commission. The availability of solar power producers as a further hedge against this purported risk is not necessary and, moreover, is not part of the purpose of PURPA or Act No. 62.

SCSBA and JDA also challenge the proposed NOC Form and the LEO standard, alleging that the components of the proposed LEO standard are unreasonable and contrary to PURPA. They also suggest that the NOC Form should incorporate certain terms regarding the termination of the LEO if the Seller ceases to comply with the requirements of the LEO formation, remove the "make-whole" provision, and give the Seller the right to terminate the PPA without liability if the interconnection facilities and network upgrades exceed \$75,000 per MW of nameplate capacity. Mr. Kassis states, however, that DESC's current business practice is to work with QFs individually

to develop a similar arrangement apart from these agreements on a case-by-case basis. DESC feels that this is a much more effective way of handling these costs given that any solution mutually agreed to by DESC and the applicable counter-party will be best-suited for that particular project. DESC has reflected this recommendation in the revised Form PPA and Standard Offer; however, Mr. Kassis notes that this will require DESC to seek adjustments at some point in the future to reflect current market practice.

III. THE COASTAL CONSERVATION LEAGUE AND THE SOUTHERN ALLIANCE FOR CLEAN ENERGY (COLLECTIVELY, "CCL/SACE")²

Similar to ORS, SCSBA, and JDA, CCL/SACE make a number of claims in its prehearing brief that also are not supported by the testimony and information presented in this matter.

For example, CCL/SACE asserts that the proposed VIC is premature at this time and suggests that the Commission should delay its consideration of the VIC until an independent study to evaluate integration of renewable energy is conducted. As discussed previously, Company Witness Bell sets forth DESC's reasons as to why this should be rejected.

CCL/SACE also complains that DESC has failed to address ancillary services benefits that renewable energy resources can provide. However, the Navigant Study specifically discusses the flexibility that can be provided by solar projects either through co-located storage or changes in operation. The Navigant Study also provides some guidelines for how storage providers could provide sufficient flexibility that the VIC could be avoided.

Regarding the methodology used by DESC to calculate the VIC, CCL/SACE alleges that the methodology incorrectly analyzes solar data, overstates reserve requirements, and fails to

² Through its prehearing brief, CCL/SACE presents, not only a summary of the issues addressed by its witness Derek P. Stenclik, but also of the issues raised by the other parties of record. With respect to CCL/SACE's characterization of the testimony of the witnesses presented by ORS, SCSBA, and JDA, DESC incorporates its responses to those issues as set forth hereinabove.

reflect actual utility reliability requirements, capabilities, and operations. In rebutting each of these allegations, and as discussed previously, Company Witness Tanner testifies that the Navigant Study uses a generally accepted method for calculating the forecast error of solar generation based on a data set provided by NREL that was created for the purpose of renewable integration studies. Furthermore, Navigant took care to avoid overstating reserve requirements. Dr. Tanner testifies that variable generating resources do require reserve requirements and these reserve requirements also require operational changes that increase operating costs for the Company compared to without those reserve requirements. The VIC reflects these additional costs that result from these variable generating resources and has been identified in this proceeding so as to prevent DESC's customers from having to unreasonably bear the burden of these costs.

Even though CCL/SACE admits it did not offer testimony on this issue, they also suggest in their brief—for the first time in this proceeding—that DESC has not used an optimal capacity expansion plan. While this issue has not been presented for consideration by the Commission in the pre-filed direct testimony of the parties, the capacity plan is set forth in the Company's IRP. CCL/SACE provided no evidence whatsoever that the expansion plan used by DESC was not the least cost plan. In fact, DESC modeled 76 scenarios which it documented in its resource plan study, and then selected the least cost plan consistent with the requirements of FERC and PURPA. Even it had been possible to use a lower cost plan as CCL/SACE suggests, then the resulting avoided costs and payments to solar developers would have been lower. Through the testimony of Mr. Stenlik, CCL/SACE also claims that DESC's modeling and planning analyses inaccurately capture current operating practices which do not require operating reserves for existing solar generation. But Company Witness Hanzlik testifies that, until recently, the challenge of balancing our system in real-time has been limited to the diversity of loads and outages of traditional

generators within the DESC BA. However, with the addition of solar generation and the intermittent production associated with this resource, there is a need for increased Operating Reserves specific to solar generation to maintain compliance with the BAL Reliability Standards.

Mr. Stenclik also suggests that DESC has overstated reserve costs and requirements by imposing fixed additional reserves instead of looking to hourly forecasted solar generation. As discussed above, however, Company Witness Tanner testifies that the nature of the DESC system is such that large numbers of reserves are always available overnight. The blending of cases with different reserve requirements properly accounts for the expected solar generation on different days. In addition, Company Witness Hanzlik states that Real-time operations of DESC's BA require operating reserves to balance DESC's load and generation at all times and after all contingency events in order to maintain system reliability and compliance with the BAL Standards. Operating reserves are calculated daily to ensure the generating capacity is available to balance load and generation as load increases from its minimum level to the maximum peak hour of the day.

CCL/SACE also suggest that Navigant did not include additional reserve capacity from Fairfield Storage Pumped Storage Plant ("FFPS"), interruptible load, or from neighboring power systems. However, Dr. Tanner clearly explains in his direct and rebuttal testimony that PROMOD allowed FFPS to change its operation to minimize overall system cost while meeting the requirements for solar integration. Accordingly, the model used in the study configured FFPS to provide reserves both when it is pumping and when it is offline. And, as discussed previously, it would be inappropriate and contrary to FERC regulations for DESC to rely upon neighboring systems to provide reserves when planning for a safe and reliable electric system. Mr. Hanzlik also testifies that NERC's reliability standards require that a BA restore the Area Control Error

("ACE") to zero within 15 minutes. In the event that all solar generation disconnected simultaneously, DESC would have to deploy its Operating Reserves to restore its ACE without burdening its neighbors or the Eastern Connection. The loss of solar generation due to the inherent intermittency of the resource therefore does not permit DESC to call on neighboring generation assets. Regarding FFPS, Mr. Hanzlik states that the plant is dispatched optimally on a daily basis with consideration for all expected loads and resources. With the addition of solar generation, DESC has increased its daily and hourly dependence on FFPS in both pump and generator mode to maintain system reliability. Committing FFPS for reserve capability only would require other more expensive generation to be dispatched to meet system needs. In addition, Mr. Hanzlik states that FFPS is not always available and is restricted at various times throughout the year due to high river flows, environmental reasons, and maintenance outages.

Regarding demand response resources, CCL/SACE asserts that DESC did not include these resources to the fullest extent possible and failed to evaluate the full range of potential services from new battery storage and CT units. Company Witness Raftery explains, however, that the Company has conducted an extensive investigation into providing additional demand side resources. Specifically, in Commission Docket No. 2019-239-E, DESC has filed along with its Request for Approval of an Expanded Demand Side Management Plan and a Modified Demand Side Management Rate Rider a comprehensive potential study and Demand Side Management program analysis, which was prepared with extensive stakeholder input by ICF International, a third-party consulting group with national standing in the evaluation of energy efficiency and demand side management programs. In that comprehensive study, it was determined that, absent Advanced Metering Infrastructure, no new programs were projected to be cost effective over the five-year planning timescale used for the Company's Request. Further, the study determined that

there are no new cost-effective programs that the Company can add that will assist to mitigate the winter peak.

CCL/SACE also suggests that DESC did not evaluate potential ratepayer cost reductions through participation in a larger balancing area or by implementing new demand response, flexible solar, CC upgrades, and discounting of solar forecasts. However, this cannot be feasibly done in the short-term as Mr. Stenclik seems to suggest. To the contrary, implementing a larger balancing area would require multiple years of study and negotiation with surrounding utilities. And, as is standard operating procedure for utilities that also operate a balancing area, DESC maintains resource sufficiency. It is inappropriate and not standard procedure to rely on the broader power system for reliability.

Mr. Stenclik also testifies regarding DESC's proposed VIC and states that DESC should reanalyze its data to reflect plan, forecasting, and system aggregation benefits as well as implement new modeling tools and other various practices. In response, Mr. Tanner testifies that the Navigant Study uses a generally accepted method for calculating the forecast error of solar generation using a data set provided by the NREL that was created for the purpose of renewable integration studies. Furthermore, Navigant took care with the study design to avoid overstating reserve requirements, ensuring that geographic diversity of solar generation was fully included in the analysis, and that the risk vs. cost of holding additional reserves was appropriately considered. Mr. Stenclik's suggestion that DESC should be required to reanalyze its data therefore is without merit.

Finally, CCL/SACE suggests that the Commission should require a Technical Review Committee to help guide utility integration studies. As discussed previously, DESC is agreeable to conducting technical workshops with respect to future changes in the variable integration

charge, but believes that those workshops should be conducted in conjunction with and as part of the Integration Study authorized by Act No. 62.

SUMMARY OF TESTIMONY FILED SINCE SEPTEMBER 30, 2019

On October 7, 2019, DESC prefiled rebuttal testimony of seven (7) witnesses: 1) John H. Raftery; 2) Eric H. Bell, P.E.; 3) Matthew W. Tanner, Ph.D.; 4) Joseph M. Lynch, Ph.D.; 5) James W. Neely, P.E.; 6) Daniel F. Kassis; 7) Thomas E. Hanzlik; and 8) Allen W. Rooks.

I. John H. Raftery

On behalf of DESC, Mr. Raftery first responds to Mr. Horii's recommendation on behalf of ORS that DESC be required to update its standard offer for future changes in the variable integration charge and that, as part of these updates, the Company also should be required to conduct technical workshops to gain input from the solar community and other stakeholders regarding these future variable integration charge updates. Mr. Raftery explains that DESC is agreeable to conducting such workshops, but believes such workshops should be conducted in conjunction with and as part of the Integration Study authorized by Act No. 62 so as to provide input necessary for the Commission to fully evaluate the issues pertinent to the establishment and development of renewable energy programs.

Further, with regard to Mr. Stenclik's assertion that DESC has not properly considered the availability of existing and new demand response resources in its analysis of avoided costs, Mr. Raftery testifies that the Company has conducted an extensive investigation into providing additional demand side resources as presented in Commission Docket No. 2019-239-E. The study filed in that matter provides clear evidence that the Company has considered and evaluated potential and existing demand side management resources and determined that there are no cost-effective programs available to reduce winter or summer peaks at this time.

With regard to Ms. Chilton's testimony and her suggestion that one of the purposes of PURPA is to ensure that PPAs do not discriminate against QFs in competing to provide generation and to allow them to compete on even terms with utilities, Mr. Raftery testifies that, in fact, the purpose of Act No. 62 is not increased competition, but development of renewable energy resources, such as solar generation, in a fair and balanced manner. He further explains that the General Assembly safeguards customers' interests by requiring the Commission to protect customers from paying more for QF generation than the objectively verifiable costs that the electrical system avoids because of that generation. He also states that under both PURPA and Act No. 62, the objectively verifiable economics of operating the utility's electrical system and the net reduction in the cost of operating that system as a result of adding QF power are the only relevant considerations in determining the price paid for that power.

As to Mr. Davis' testimony, Mr. Raftery responds that any suggestion that DESC has not successfully worked with solar developers to bring economically viable renewable generation projects to market is mistaken. He notes that DESC already has purposely and effectively incorporated solar generation into its portfolio of generation resources in compliance with PURPA, and Act No. 62 simply extends the process that DESC already has implemented. Further, Mr. Raftery notes that it is inaccurate to conclude that adding solar generation will displace capacity that DESC would otherwise add to its system to be able to serve customers reliably. DESC's capacity need is for the winter; therefore, adding solar resources will not change DESC's capacity needs because these resources do not add to the capacity available to meet winter peaks. Accordingly, Mr. Raftery testifies that, if DESC and its customers pay a solar developer for "avoided capacity costs," they will pay for capacity costs that in fact are not avoided. Further, based on the provisions of the Settlement Agreement that the SCSBA itself agreed to, Mr. Raftery

states that there is no risk that DESC will add large capacity plants to its base load to the exclusion of renewable resources without the consideration of renewable energy resources as options to meet its generation and peaking needs. Mr. Raftery also disagrees that there is a capital bias by utilities to spend their own money to meet customer needs and opines that it is in the Company's interest to establish accurate avoided costs that reflect its true generation and peaking needs, in contrast to solar developers.

Lastly, as to the suggestion that utilities have an underlying financial incentive to make choices that result in lower avoided cost calculations, Mr. Raftery makes clear that the Company's incentive is to establish an avoided cost amount that accurately reflects the Company's generation and peaking needs. In contrast, he notes that solar developers have an incentive to establish artificially high avoided costs in order to maximize their own return.

II. Eric H. Bell, P.E.

In his rebuttal testimony, Company Witness Eric Bell first responds to Mr. Horii's concern the Navigant Study overstated reserve needs by holding reserve levels constant throughout each day of year. Specifically, Mr. Bell states that additional reserves for variable energy resources ("VERs") should be applied in hours that VERs are forecasted to deliver energy. He also explains that in daily generation planning, DESC uses an hourly profile for operating reserves based on the VACAR contingency reserve requirement and additional operating reserves for the hour-by-hour solar generation forecast by DESC using detailed forecast weather data. Accordingly, Mr. Bell confirms that Navigant made an appropriate adjustment to the VIC calculation to adjust for the difference between constant reserves and lesser amounts needed on 62% of days modeled. Mr. Bell therefore concludes that Mr. Horii's suggestion to reduce the additional reserves in the Navigant Study would expose DESC's customers to higher costs.

Mr. Bell testifies that Mr. Horii's opinion that DESC overstated the need for additional operating reserves to accommodate the integration of solar is incorrect. DESC has compiled data showing that drops of 35% of installed PV Solar MW occur with significant frequency over a one-hour time frame, and larger drops occur 4% of the time. Reducing the flexible reserve level below 35% poses an unacceptable risk to providing reliable service to DESC's customers. Mr. Bell notes that the system can expect to experience unexpected drops of 62% of installed solar MW over a four-hour period. The risk from this data is that there is approximately a 32% probability that at least one baseload or intermediate unit will be forced out during the year. With solar generating more than 50% of the hours in a year and cloud formations across the system almost every day interfering with solar output, there is a significant risk that solar drops and base/intermediate generator outages will overlap. This risk will increase as more solar is added to the system. In addition, DESC must comply with its obligations under VACAR, and must comply with FERC Balancing Authority requirements as well. VACAR reserves must be maintained in the face of solar intermittency. Thus, reserves in addition to VACAR reserves are needed to comply with specific balancing standards taking into account the intermittency of solar generation and the operating characteristics of DESC's system. Mr. Horii's suggestions would expose DESC's customers to unacceptable risks.

With regard to Mr. Horii's opinion that it may be appropriate for DESC to use solar drops over a shorter timeframe than 15 minutes, Mr. Bell states that 15 minutes is too short of a period to assess the impact of solar intermittency on the operations and economics of the electric generating system. He also states it is even less reasonable or appropriate to analyze contingency or operating reserves using periods of less than 15 minutes.

Mr. Bell also testifies that Mr. Stenclik's suggestion the Navigant Study assumed improperly high reserve requirements is incorrect because DESC's actual operating practice requires additional reserves equaling 40% of actual output for solar intermittency. He explains that system dispatch has determined that because of solar intermittency, 15-minute reserves must be supplemented with additional reserves to cover 40% of the solar production at any given time. This allows the system to respond to solar intermittency that exceeds 15-minutes and still maintain the operating reserves necessary to respond to the largest thermal unit in operation at that time tripping off line. Also, because the probability is significant of a coincidence of a thermal unit's forced outage and a large, unplanned drop in PV Solar persisting for hours, Mr. Bell testifies that prudent operators must consider and plan for both contingencies happening together and that reserves for solar intermittency must be in addition to the existing contingency reserve requirement.

Mr. Bell also testifies that DESC uses hourly forecasted solar production, as well as actual solar production, to plan and maintain reserves on an hourly basis for real-time system operations. Accordingly, Mr. Bell states that any assertion DESC failed to evaluate less costly methods of integrating low-cost renewable resources is incorrect. In fact, Mr. Bell notes that DESC and Navigant have compared the cost effectiveness of less costly methods of integrating low-cost renewable resources; however, the fixed cost is likely to be higher than the cost of carrying additional reserves from existing units.

Mr. Bell also explains that FERC monitors DESC's compliance with certain balancing area standards and maintain contingency reserves. He further notes that solar generation impacts compliance for most standards, and FERC has the authority to administer significant fines if DESC does not meet the NERC/FERC Electric Reliability Organization requirements.

In addition, Mr. Bell disagrees with Mr. Burgess' assertion that a VIC should not be established until an independent study has been performed and that it is premature to impose an integration charge for existing solar PPAs. The DESC system is already experiencing the effects of the addition of solar resources to the system and customers are currently paying additional costs. Accordingly, the variable integration charges authorized by certain existing PPAs should be authorized for recovery at the earliest opportunity in order to remove these costs from customers' fuel costs.

III. Matthew W. Tanner, Ph.D.

Dr. Tanner begins his rebuttal testimony by addressing ORS Witness Brian Horii's assertions that the assumptions underlying the Navigant Study overstate the risks of variable generation to the Company. Dr. Tanner explains that Navigant properly considered the tradeoff between the risk of solar undergeneration and the likelihood of it occurring and that the threshold used is appropriate for the VIC calculation. He also states that the reserve requirement modeling for the entire day is an aspect of modeling that does not conservatively bias the results of the Navigant Study because the make-up of the DESC system is such that large numbers of reserves are always available overnight. Regarding Mr. Horii's suggestion that DESC should use a 2% threshold for solar undergeneration, Dr. Tanner testifies that assuming a 1% level of solar uncertainty provides the appropriate tradeoff between the cost of holding more reserves and mitigating risk from undergeneration. Dr. Tanner also disagrees that the Navigant Study overstated reserves needs by holding reserve levels constant because additional reserves for solar integration are not a binding constraint on the system in non-solar hours and do not materially impact the overall system operating costs or the VIC.

In response to CCL/SACE witness Derek Stenclik's claims that the Navigant Study incorrectly analyzed solar data, Dr. Tanner testifies that the Navigant Study uses a generally accepted method for calculating the forecast error of solar generation based on data provided by NREL that was created for the purpose of renewable integration studies. He also explains Navigant took care to avoid overstating reserve requirements. Dr. Tanner also rebuts Mr. Stenclik's suggestion that the Navigant Study did not allow combined cycle units to provide reserves and explains that Navigant properly considered combined cycle operation. He also testifies that the Navigant Study allowed FFPS to change its operation to minimize overall system cost while meeting the requirements for solar integration. Further, he explains that relying on interruptible load to meet daily operating reserve requirements would result in substantial additional economic impacts to interruptible customers. He also disagrees with Mr. Stenclik's claim that DESC failed to evaluate less costly methods of integrating low-cost renewable resources and his suggestion that DESC should have considered implementing a larger balancing area, which would require multiple years of study and negotiation with surrounding utilities.

Mr. Stenclik also suggests that DESC erred by targeting the VIC to a specific technology; however, Dr. Tanner states that the Navigant Study focused on solar because that is the only variable generating technology that is being added to the Company's system at this time. Dr. Tanner also testifies that the Navigant Study was carefully designed to properly evaluate the operational changes and costs to the DESC system as variable solar is added to the system. Regarding Mr. Stenclik's claim that forecast errors and solar do not pose reliability risks to DESC and that other grid operators have integrated solar without a significant increase in reserves, Dr. Tanner responds by stating that utilities, such as DESC, that operate a balancing area must maintain resource sufficiency and that it is inappropriate to rely on the broader power system for reliability.

He also explains that Mr. Tanner's suggestion conflates regulating reserves with operating reserves.

In response to SCSBA Witness Ed Burgess' assertion that it is inappropriate to model the DESC as a partially islanded system, Dr. Tanner states that, as the operator of a balancing area, DESC must maintain self-sufficiency in planning. Therefore, it is not appropriate to assume that, if there is a reliability issue, surrounding utilities will have available resources to support DESC's system needs in the event of a reliability issue. He also testifies that while DESC does trade electricity with surrounding systems, this activity is generally for economic opportunity and does not have a significant reliability component. DESC does not rely on short-term trades for any long-term reliability planning. Dr. Tanner also states that Mr. Burgess' suggestion that DESC should combine BAAs or expand reserve sharing agreements would neither be quick, easy or cheap to implement.

Regarding Mr. Burgess' challenges to the consideration of geographic diversity, Dr. Tanner explains that Navigant carefully designed the Navigant study to ensure that geographic diversity was properly considered. He also disagrees with Mr. Burgess' claim that Navigant should have used a two-hour forecast window or considered offline combined cycle units as providing operating resources. Mr. Burgess also suggests that solar QFs could provide integration sources or ancillary services. In response, Dr. Tanner states that there are methods by which solar projects can provide flexibility either by operating differently or by co-locating storage with the projects. Dr. Tanner testifies that requiring additional reserves at night does not materially change system economics and, to the extent a change might occur, it is correctly considered in the Navigant Study. Dr. Tanner also explains that the Navigant Study was designed to provide a methodology to estimate the system operation changes and the resulting costs. The Study input assumptions are set

up to match real-world operation and the model was benchmarked to the DESC system. Dr. Tanner further disagrees with Mr. Burgess' claim that reserve requirements have not increased as solar generation has increased, explaining that Mr. Burgess has conflated regulating reserves and operating reserves. Finally, Dr. Tanner agrees that the VIC could be mitigated but only if the variable resources are providing flexibility to DESC in such a way that there is no need to hold additional reserves, then those specific resources should not be charged a VIC as they are not increasing system costs. Therefore, Dr. Tanner states it is appropriate to calculate the VIC for solar generation without considering this flexibility.

IV. Joseph M. Lynch, Ph.D.

Through his rebuttal testimony, Dr. Lynch first disputes Mr. Horii's contention that the Company's assumptions are overly simplistic and deterministic. He explains that his studies provide a thorough and detailed analysis of a composite solar profile and its impact on system load and demonstrate that solar does not avoid the Company's need for winter capacity and does not avoid any capacity costs, and therefore has a zero-capacity value. Dr. Lynch also explains that load on the DESC system is subject to significant winter spikes during very cold weather and that it was critical to distinguish between base capacity needs and peaking needs in developing the Company's need for capacity. He also testifies that, in order to analyze the risk presented by extreme weather both in the summer and winter, the Company conducted statistical regression studies to develop seasonal probability distributions of demand which are sophisticated statistical and probabilistic techniques as advanced as any used in the utility industry and certainly are not simplistic as Mr. Horii suggests.

Regarding Mr. Horii's suggestion that the ELCC study supports a conclusion that solar provides capacity value equal to 24% of nameplate capacity, Dr. Lynch explains that he only

calculated the ELCC to demonstrate that the LOLE method, which underpins the ELCC calculation, does not work for the DESC system. He also states that, on a cold winter morning when the system is peaking before sunrise, DESC dispatchers obviously cannot deploy solar capacity because it simply is not generating any electricity before sunrise. He further testifies that paying a 24% solar credit to new solar providers when there are no avoided capacity costs means DESC's customers will be paying above avoided cost for QF power. Dr. Lynch explains that doing this would be unjust and unreasonable to ratepayers, would not be in the public interest, and would be inconsistent with PURPA and FERC regulations.

In responding to the testimony of Mr. Ed Burgess, Dr. Lynch testifies that DESC has concluded and made clear that its winter peak forecast is higher than its summer peak forecast and that its winter peak can experience spikes causing the need for a 21% winter reserve margin. He also states that DESC determined that incremental resources must help serve winter demands in order to have capacity value and, because solar cannot be depended on to serve winter peaks, solar will not allow DESC to avoid any of its future capacity needs and therefore produces zero avoided costs. Regarding Mr. Burgess' claim that discounting summer capacity may impose unreasonable costs on ratepayers, Dr. Lynch states that if DESC were to pay for summer capacity, then solar QFs would be paid above the Company's avoided costs. Dr. Lynch explains that this result, not only is directly contrary to the requirements of PURPA and Act No. 62, but also would definitely impose unreasonable costs on ratepayers.

In response to Mr. Burgess' claim that DESC inappropriately planned for one peak hour of the year, Dr. Lynch explained this is not the case and that DESC analyzes the need for capacity around the year based on load and supply outages as well as the risks associated with peaks due to abnormal weather and the probability of outages. In summary, Dr. Lynch explains that the

Company's Reserve Margin study used sophisticated statistical and probabilistic techniques that consider the need for capacity throughout the year and not simply at one peak hour. Dr. Lynch further disagrees with Mr. Burgess' claim that DESC did not properly assess the capacity contributions of QFs and states that DESC's goal is to ensure that ratepayers are held harmless with the purchase of QF power. He also disagrees with Mr. Burgess' statement that DESC employed only a single year of load data by explaining that DESC conducted three separate studies using three different annual periods, all of which concluded that solar resources have no impact on DESC's capacity needs.

As to Mr. Burgess' statement that solar has a meaningful, non-zero capacity value, Dr. Lynch responded that DESC's resource plan requires new winter capacity and since solar cannot be depended on to produce power during winter peak times, solar cannot avoid any capacity in the resource plan and therefore its avoided capacity cost is zero. He also stated that Mr. Burgess' testimony that solar has a 24% ELCC value was incorrect and that Mr. Burgess' simplistic calculation, although wrong, should only use 4% or 4 MW. Dr. Lynch further disagreed with Mr. Burgess' claim that DESC's use of Loss of Load Hours was a potential source of bias against solar, stating that the fact that solar does not produce power when the sun is not shining is simply a characteristic of solar technology. Finally, regarding Mr. Burgess' claim that LOLE is a commonly used reliability metric for resource planning, Dr. Lynch testifies that it is reasonable for an electric utility to not use LOLE in its reliability assessment. Even so, Dr. Lynch explains that it would be far from the preferred approach. In summary, DESC's resource plan requires new winter capacity and since solar cannot be depended on to produce power during winter peak times, solar cannot avoid any capacity in the resource plan and therefore its avoided capacity cost is zero.

V. James W. Neely, P.E.

Mr. Neely begins his rebuttal testimony by responding to the testimony of Mr. Horii. Mr. Neely explains that, in setting the price for certain past PPAs, the avoided cost calculations did not include the effect of solar generation on the operating reserves. The Navigant Study calculated the VIC to apply to these past PPAs as authorized by certain agreements and the calculated amount will be used only for this defined group of past PPAs. In contrast, the avoided cost calculations presented in testimony pertain to the avoided costs associated with adding the next 100 MW of solar generation to the system. These are forward looking calculations, not historical.

Mr. Neely further states that DESC has an obligation and a commitment to provide safe and reliable electric service to its customers and that it cannot accept a greater risk of outages as Mr. Horii suggests. Mr. Neely also explains that DESC has not set its operating reserves at a level where an unreasonably low risk is being assumed. Mr. Neely also explains that DESC conducted an analysis of the Company's need for operating reserves to safely and reliably operate its system and provide electric service to its customers and determined that it must maintain additional reserves to address the inherent variability of solar generation. DESC therefore has appropriately calculated avoided energy costs for solar and non-solar resources contrary to Mr. Horii's suggestion otherwise. Mr. Neely further points out flaws in Mr. Horii's recommendations that DESC use solar drops over a shorter time period. He also notes that the Company has determined that maintaining operating reserves based on a one-hour analysis reasonably balances reliability risks with the cost of alternative targets.

As to Mr. Horii's claim that DESC's calculations contain certain flaws, Mr. Neely testifies that, after this issue was identified, the Company promptly addressed the issue and provided the correct calculations. Mr. Neely also points out that, while Mr. Horii agrees that solar integration

costs exist, he does not include any of these costs in his proposed avoided energy costs. As a result, Mr. Neely testifies that ORS effectively is recommending that all of these costs be shifted to and borne by DESC customers, which is directly contrary to the mandates of Act No. 62. Regarding the target reserve margin, Mr. Neely testifies that DESC separates its reserve requirements into peaking and base in order to develop a resource plan that is least cost to our customers and that the reserve margins are reasonable and necessary to meet reliability requirements.

In response to Mr. Horii's claim that solar provides capacity value in the winter, Mr. Neely cited the study conducted by the Company which demonstrates that solar does not help DESC avoid any need for capacity in the winter season, primarily because the winter peak occurs either early in the morning before solar begins to generate energy or in the evening after solar is no longer generating. Mr. Neely also rebuts Mr. Horii's testimony that the Company improperly based its calculations on the cost of low cost purchased power, stating that these resources were the same as those included in the Company's 2019 IRP. Mr. Horii also recommends that it is more appropriate to use a 20-year economic life for a CT plant; however, Mr. Neely testifies that the "SCE&G 2014 Depreciation Study" which was filed with the Commission in Docket No. 2015-313-E and approved by the Commission on September 16, 2015, reflects that the life span of peaking turbines is between 60 and 75 years. Mr. Neely also disagrees with Mr. Horii's suggestion that DESC should use a 93 MW change in capacity, stating that using a capacity change of 100 MW is consistent with the avoided energy costs and with the Company's prior calculations. Regarding Mr. Horii's recommended NEM values, Mr. Neely states that Mr. Horii provides no basis for his avoided energy costs and overstates the capacity value for solar.

In response to Ms. Rebecca Chilton's testimony that DESC's avoided cost filing does not appreciate the purpose of Act No. 62, Mr. Neely identifies the various portions of the filing that

comply with Act No. 62 and that DESC's avoided cost calculations and methodology properly compensate solar developers. Regarding Ms. Chilton's speculation regarding natural gas prices, Mr. Neely testifies that, although it is impossible to predict with certainty what will happen with gas prices, our forecast of natural gas prices is based upon reasonable and appropriate assumptions as well as industry data.

Mr. Neely next responds to Mr. Burgess' suggestion that DESC has incentives and biases in calculating avoided cost rates, pointing out that Mr. Burgess provides no evidence in this regard. Even so, Mr. Neely states DESC's incentive is to be faithful to the requirements of Act No. 62 and PURPA and to determine its cost as accurately as reasonably possible so that our customers are not harmed by the Company paying solar developers more than its actual avoided costs, while solar developers are not harmed by being paid less than the Company's actual avoided costs. Mr. Neely also disagrees with Mr. Burgess' suggested "zone of reasonableness" for avoided costs, stating that this appears to be an attempt to artificially raise the avoided costs under the guise of helping solar developers. Although Mr. Burgess further states that eliminating the VIC will have a negligible impact on DESC's customers, Mr. Neely explains that doing so would improperly shift the cost burden of solar onto customers through higher rates.

In response to Mr. Burgess' statement that solar and solar plus storage should have the same methodologies, Mr. Neely explains that solar and solar with storage are different resources with different generation profiles and the methodology used by DESC for calculating the avoided cost from each properly reflects these differences. He also disagrees with Mr. Burgess' recommendation of a single rate regardless of the underlying technology, stating that solar has a unique generation profile that is different from other renewable generation resources. Regarding Mr. Burgess' suggestion of a "technology neutral rate," Mr. Neely states that it is appropriate to

calculate the solar avoided cost based on non-dispatchable solar. Mr. Neely further disagrees with Mr. Burgess' testimony that DESC's filing was not reasonably transparent, pointing out that Mr. Burges was able to accurately describe the methodology and that DESC properly responded to all of SCSBA's requests for information. Mr. Neely also testifies that all the factors reflected in DESC's avoided energy cost calculation are factors that affect DESC avoided energy costs as a result of the addition of solar generation.

Mr. Neely also responds to Mr. Burgess' concerns about DESC's treatment of solar with storage, stating that DESC has not proposed a solar with storage tariff because it expects that the size of these projects will exceed the 2 MW limit for standard offer projects. Regarding the selection of four pricing periods, Mr. Neely explains that these periods cannot be biased against solar because they do not apply to solar generation. As to the Company's consideration of imports and exports in the avoided energy cost model, Mr. Neely states that the model is designed to model the DESC system in a way that simulates the actual dispatch of energy resources and that the DESC system operates primarily as an isolated system with limited off-system purchases and sales. Mr. Neely also explains why it was unnecessary to consider coal combustion cost residuals in its calculations. Mr. Neely further testifies that revising the way DESC levelizes its avoided energy costs would have no impact on actual avoided costs. Mr. Neely also states that using resource plan #7 to calculate avoided energy costs is appropriate because it is the least cost plan.

As to Mr. Burgess' suggestion that using the cost of a new peaker facility is potentially biased against QFs, Mr. Neely testifies that this cost is appropriate and is consistent with the benchmark cost of peaking resources reported by the Energy Information Administration of the United States Department of Energy. Mr. Burgess suggests that the Company should use different

capital cost assumptions, but Mr. Neely testifies that the Company believes that the expansion plan chosen is the most appropriate.

Mr. Neely responds to the testimony of Mr. Steven Levitas and his purported concern about the VIC and embedding the charge in its avoided costs for future QF purchases. He states that the most appropriate method of addressing issues created by solar intermittency is to model the system with higher operating reserves. The increase in operating reserves is now part of the model and is reflected in our estimated avoided energy costs. Therefore, there is no additional charge included in the avoided costs for integration.

Finally, Mr. Neely disagrees with the assertion by Mr. Derek Stenclik that including a cost of variable integration is premature at this time and should be delayed until an independent study has been made. Mr. Neely testifies that his analysis does not include a variable integration charge but, instead, models operating reserves equal to 35% of solar generation. This analysis accurately reflects the avoided costs of solar energy because the cost of maintaining operating reserves equal to 35% of installed solar generation is an actual cost that exists today. Ignoring these costs would mean that DESC will pay more for solar generation than its avoided costs, shifting that expense onto its customers.

VI. Daniel F. Kassis

As discussed in his rebuttal testimony, Mr. Kassis is requesting permission to adopt the direct testimony filed in this docket by John "Eddie" Folsom, who is a direct report of Mr. Kassis' at DESC. In addition, Mr. Kassis addresses certain criticisms of the NOC Form, the Standard Offer Form, and the Form PPA that were raised by certain of the other parties.

Specifically, Mr. Kassis discusses that the NOC Form provides a QF with assurance that if DESC has yet to construct the facilities necessary to provide interconnection service to the QF, the

365-day time period will be extended so that the NOC Form will not terminate, but has revised the NOC Form to expressly state that no damages will be imposed on either party as a result of DESC not having interconnection facilities. He also states that, in response to Mr. Horii's testimony, DESC has removed a sentence from the Form PPA and the Standard Offer regarding the expected range of uncertainty based on historical operating experience and has made certain corrections to correct references to DESC as opposed to SCANA. Regarding certain recommendations made by Mr. Lawyer, Mr. Kassis explains why it is not necessary to add language to clarify the effects of an executed LEO to the Rate PR-1 tariff.

In response to the testimony of Ms. Chilton, Mr. Kassis provides a general explanation of PURPA and that it mandates rates that are just and reasonable to the electric consumers and prohibits rates that exceed the incremental cost to the electric utility. Mr. Kassis states that, in essence, PURPA is intended to first protect ratepayers—not QFs. He further testifies that FERC recently re-examined its need to reform PURPA based on current market conditions and noted that when Congress passed PURPA, there was no open access transmission and essentially no competition in electric wholesale markets—both of which exist today. Regarding Ms. Chilton's testimony on QF financing, Mr. Kassis testifies that FERC examined the ability of QFs and non-QFs to obtain financing and concluded that both QFs and non-QFs have access to financing. It did not, however, compare a QF's financing with that of a utility, but considered the parity between QFs and non-QFs. FERC also observed that existing PURPA avoided cost rate provisions are not necessary for non-QF, independent power generators to establish contractual arrangements and obtain financing. He also states that FERC examined the relationship between avoided cost rates and actual incremental cost, but focused on whether avoided costs rates have exceeded incremental costs in violation of PURPA. In sum, Mr. Kassis states that FERC is concerned with adhering to

Congress' fundamental requirement that avoided cost rates may not exceed incremental costs. If an avoided cost rate is accurate but low, it may not be raised above incremental costs for any reason, even if the reason is to attract more favorable financing. In response to Ms. Chilton's testimony regarding the contract term, Mr. Kassis states that employing inaccurate avoided cost rates that exceeds incremental costs with longer initial terms in order to ensure favorable financing terms for QFs would violate PURPA and Act No. 62 and as FERC concluded is not warranted in today's regulatory and market conditions.

Mr. Kassis also responds to certain issues raised by Mr. Levitas in his direct testimony regarding the concept of "commercial reasonableness." Mr. Kassis states that Mr. Levitas' proposed definition solely refers to what may constitute reasonableness in the mind of the "promisor" without any reference to the perspective or unique obligations that may be placed upon the counterparty under the agreement who is affected by the "promisor's" efforts. Mr. Kassis therefore states that it is unreasonable to not consider the relationship as a whole when making these judgments under the agreement. He also testifies that the proposed definition contains vague language that would be incredibly difficult, if not impossible, to follow. Regarding the term of PURPA PPAs, Mr. Kassis explained that constant overestimations in long-term agreements result in higher prices paid to QFs at the expense of ratepayers and likely has resulted in subsidization of renewable energy suppliers by ratepayers.

Mr. Kassis also disagreed with the concept of reducing liquidated damages for the failure of QFs to timely achieve commercial operations stating that liquidated damages in this context are generally estimated as a proxy amount to compensate the utility for any costs or losses it incurs in obtaining replacement capacity and energy due to a QF's non-performance. Mr. Kassis does agree,

however, that revisions to the Form PPA and Standard offer should be made to clarify issues relating to liquidating damages for interconnecting utility delays.

As to Mr. Levitas' suggestion that DESC tie the completion date to the estimated in-service date, Mr. Kassis testifies this concept is not reasonable because, by definition, this is a contract for the purchase of power and it is appropriate to keep the Completion Date as written. He also disagrees that the guaranteed energy production should be reduced, noting that this is a purely commercial matter to address risk from a QF's failure to perform in accordance with the contract. He further states it is reasonable to terminate a PPA for energy shortfalls from a QF, stating that QFs can, in large measure, control the variables affecting its ability to meet this requirement. Regarding the terms and conditions for energy storage, Mr. Kassis also testifies that these issues will be addressed as part of the Settlement Agreement filed in Docket No. 2017-370-E.

In response to Mr. Levitas' suggestion that QFS should have a limited diligence period of 30 days to confirm project viabilities, Mr. Kassis states that it is hard to imagine why a QF seeking to enforce PURPA's "must take" requirement would need additional diligence time, but notes that a QF has 20 business days until it must provide its Development Period Credit Support. Mr. Kassis also disagrees with the suggestion that DESC should not be able to approve the Seller's construction and operation contracts because it is needed to mitigate adverse operating conditions. However, he notes that DESC is willing to strike the provisions of Section 4.1(b) of the Form PPA and Standard Offer. As to the appropriate measure of damages in the event of a termination after the commercial operation date, Mr. Kassis disagrees that such an event would not be harmful and that DESC accounts for these generating assets in its resource plan and relies on these plants performing pursuant to the contract.

Regarding the commercial reasonableness of the Standard Offer and Form PPA, Mr. Kassis states that the majority of the concepts about which Mr. Levitas expresses concern have been included in various PPAs in the past. However, Mr. Kassis' testimony rebuts each of Mr. Levitas' specific concerns. Mr. Kassis also notes that DESC's current business practice is to work with QFs individually to develop termination arrangements on a case-by-case basis which is a much more effective way of handling these costs. However, because Mr. Levitas' suggestion that the termination right be permitted if the interconnection costs exceed \$75,000 per MW or project nameplate capacity is in the range DESC has used, DESC has reflected this recommendation in the revised Form PPA and Standard Offer. As to Mr. Levitas' testimony concerning QF financing, Mr. Kassis notes that the ability to obtain financing has not adversely affected the growth and success of QF projects in DESC's territory in any material manner. He also states that FERC has indicated independent power producers are increasingly finding favor with financing parties, and are less frequently relying on the PURPA-protections in these PPAs to obtain such financing.

As to the NOC Form, Mr. Kassis explains that it is reasonable to prevent a QF who fails to perform in accordance with the NOC form to forego fixed-pricing for two years to reduce the potential for gaming the system. Regarding the requirement for land-use approvals and environmental approvals from QFs, Mr. Kassis states that, in order to establish a non-contractual LEO, a QF must evidence its substantial commitment. DESC's proposals also align with FERC's policies that require a QF must show that it has "satisfied or, is in the process of undertaking, at least some" some of FERC's enumerated items, such as obtaining site control, filing an interconnection application, securing permitting, and certain other "reasonable criteria to allow the QF to demonstrate its commercial viability and financial commitment."

VII. Thomas E. Hanzlik

Mr. Hanzlik's rebuttal testimony begins by discussing his duties as Manager of System Control Center for DESC and providing some background information regarding DESC's monitoring and control of its transmission system, dispatch of its generation fleet, and reliably meeting customer load in real-time. Mr. Hanzlik explains the Electric Reliability Organization ("ERO") which is tasked with developing and enforcing mandatory reliability standards, including the authority to levy penalties up to \$1 million per day per violation. Mr. Hanzlik also states that, as a Balancing Authority, DESC must comply with certain BAL Reliability Standards, which are mandatory requirements, and is subject to fines, penalties, and mitigation measures for failure to comply with these requirements. Mr. Hanzlik further discusses how DESC evaluates available generation resources and establishes operating reserves in order to meet load on a daily basis.

In response to Mr. Stenclik's suggestion that DESC inappropriately assumed high reserve requirements in its analysis, Mr. Hanzlik explains that real-time operations of DESC's BA require operating reserves to balance DESC's load and generation at all times and after all contingency events in order to maintain system reliability and compliance with the BAL Standards. He further states that, until recently, the challenge of balancing the DESC system in real-time has been limited to the diversity of loads and outages of traditional generators within the DESC BA. However, with the addition of solar generation and the intermittent production associated with this resource, there is a need for increased Operating Reserves specific to solar generation to maintain compliance with the BAL Standards. He also states that DESC's operating experience shows that it cannot be reliably predicted when solar panels will either reduce or increase their output, and therefore we must factor in the variable and significantly unpredictable operating characteristics of solar generation as a factor effecting reliability.

Regarding Mr. Stenclik's suggestion that there would be no reliability risk even if all of DESC's solar generation disconnected simultaneously, Mr. Hanzlik explains that this suggestion ignores how NERC ensures the reliability of our nation's electric grid and the enforcement of its Standards. He also addresses the mandatory standard that DESC must regulate frequency within its BAA by maintaining frequency within normal limits on a consecutive 30-minute basis and that sudden drops in solar generation as well as sudden spikes in solar generation can greatly impact frequency and ACE. As a result, Mr. Hanzlik states that compliance with these requirements has become more difficult with the addition of non-dispatchable solar generation within the DESC BA.

He also disagrees with Mr. Stenclik's suggestion that any short-term mismatch between generation and load would result in ACE which can be addressed through coordination with neighboring BAs. Specifically, he states that NERC standards require a BA to restore the system ACE to zero with 15 minutes and, that under an event such as that described by Mr. Stenclik, DESC would have to deploy its Operating Reserves to restore its ACE without burdening its neighbors or the Eastern Interconnection. Mr. Hanzlik also explains that DESC cannot just simply modify its coordination with neighboring balancing areas because each balancing area is responsible for balancing its BAA in real-time and Mr. Stenclik's suggestion seems to ignore NERC's overall approach to reliability.

Regarding Fairfield, Mr. Hanzlik testifies that this unit is dispatched optimally on a daily basis with consideration for all expected loads and resources and that committing FFPS for only reserve capability would require other more expensive generation to be dispatched to meet system needs. He also testifies that FFPS is not always available and is restricted at various times throughout the year due to high river flows, environmental reasons, and maintenance outages. Mr.

Hanzlik further describes how DESC balanced its system before the addition of solar resources and that, as non-dispatchable generation increases, so does DESC's requirement for Operating Reserves. Specifically, he testifies that the addition of solar generation is variable, non-dispatchable, and uncontrolled. Thus, these resources have resulted in the need for maintaining increased levels of operating reserves to account for the variability and forces DESC to rely on combined-cycle plants to provide more reserves and less base load support. Thus, these units cannot provide as much efficient, low-cost generation to meet energy needs on the system as would otherwise be the case.

Mr. Hanzlik further explains that NERC compliance with solar is particularly difficult during periods when the weather is mild and demand for energy is low, because it can result in periods of overgeneration, high voltage, high frequency and other similar compliance issues. Finally, Mr. Hanzlik testifies that 35% operating reserves tied to renewable generation is not sufficient, because System Control considers 40% of forecasted solar to be at risk. DESC therefore must maintain reserves to support this remaining 40% of forecasted solar output, which is not counted on for reliability purposes and is assumed to be generation that could be lost. He further notes that this number is likely to increase as solar generation increases, which will result in more operating reserves and resources with fast ramp rates.

VIII. Allen W. Rooks

Through his rebuttal testimony, Mr. Rooks responds to certain issues raised in the direct testimony of Robert A. Lawyer filed on behalf of ORS. Specific to Mr. Lawyer's recommendation that the Company add certain language to its rate PR-Avoided Cost Methodology requiring any updates to the factors or analysis related to the avoided cost methodology be approved by the Commission before being changed, DESC agrees that any changes to the *methodology* itself would

require Commission approval. However, Mr. Rooks explains the Company would not agree to seek Commission approval prior to updating the inputs incorporated into the methodology and used to calculate DESC's avoided costs, as such a requirement would be unnecessary, unduly burdensome, and outside of the scope of Act No. 62. Mr. Rooks also sponsors updated version of his pre-filed direct testimony Exhibit Nos. __ (AWR-6 and 7) to reflect the changes set forth in the rebuttal testimony of Company Witness Kassis.

STIPULATIONS AND ISSUES NOT IN CONTROVERSY

DESC is unaware that any of the parties to this proceeding have agreed to any stipulations or otherwise reached any agreement regarding the issues to be considered in this matter.

OUTSTANDING PROCEDURAL AND EVIDENTIARY ISSUES

To the extent that the Commission allows all parties to present their witnesses in panel format, DESC is agreeable to such a procedure.

DESC is unaware of any specific procedural or evidentiary issues at this time, but specifically reserves and does not waive its right to raise any such issues at the appropriate time and as it may deem necessary.

CONCLUSION

As more fully described in the pre-filed direct and rebuttal testimony of its witnesses, DESC asserts that its proposed Standard Offer, avoided cost methodology, form contract PPA, and NOC Form fully comply with the requirements of S.C. Code Ann. § 58-41-20 and satisfy the goals of Act No. 62. The Company further asserts that its proposal regarding the treatment of those issues which were bifurcated from consideration in Docket No. 2019-2-E provide a reasonable and appropriate method by which to account for and "true up" the necessary adjustments that were contemplated by the Commission in that proceeding.

DESC therefore respectfully requests that the Commission approve the Company's proposed Standard Offer, form contract PPA, Notice of Commitment to Sell form, the other terms and conditions proposed by DESC, and the Company's proposed methodology to calculate avoided costs. DESC also requests that the Commission find the Company's proposals to be consistent with the requirements of Act No. 62, to be fair and reasonable and in the public interest, and to properly reflect the Company's avoided costs³ so that customers are not burdened with subsidizing developers of solar generators. Finally, the Company requests that it be authorized to separately account as an incremental cost the differences in its NEM values, which were stayed pursuant to Order No. 2019-274, and to be allowed to seek an appropriate adjustment for the differences in these costs and values in its 2020-2-E annual fuel cost review proceeding.

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³ "Avoided costs" means the incremental costs to an electric utility of electric energy or capacity or both which, but for the purchase from the qualifying facility or qualifying facilities, such utility would generate itself or purchase from another source. S.C. Code Ann. § 58-41-10(2).

Respectfully submitted,



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